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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/155,241	09/22/1998	ANDRE JOUANNEAU		8350

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EXAMINER	
BEHREND, HARVEY E	
ART UNIT	**PAPER NUMBER**
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Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 09/155,241	Applicant(s) JOUANNEAU, ANDRE
	Examiner Harvey E. Behrend	Art Unit 3641

-- *The MAILING DATE of this communication appears on the cover sheet with the correspondence address* --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on 4/26/04

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) 1-54 is/are pending in the application.

4a) Of the above claim(s) 13-38 is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) 1-12, 39-54 is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1)☒ Notice of References Cited (PTO-892)

2)☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3)☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date 4/26/04

4)☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.

5)☐ Notice of Informal Patent Application (PTO-152)

6)☐ Other: _____.

1. The amendment filed 4/26/04 presents new claims but fails to lists which of the newly added claims are considered readable on each of the elected species.

As indicated in the paragraph bridging pages 3 and 4 of the 8/28/00 Office action, it is applicants responsibility to provide a listing of all claims readable on each of the elected species, including any claims subsequently added.

Newly added claims 39-74 appear readable on each of the elected species and will thus be examined along with claims 1-12.

2. The following is a quotation of the first paragraph of 35 U.S.C. 112:

> The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

3. Claims 1-12, 39-74 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention.

All claims have been amended to recite a current density of at least 100 mA/cm^2.

While this claim language recites a minimum current density, it is open ended as it does not recite a maximum current density and thus reads on current densities such as 100 A/cm^2, 200 A/cm^2 and on up.

Applicant on page 25 of the 4/26/04 response, has specifically referred to page 21 of the specification for support for this claim limitation.

While said page 21 in lines 10-12 provides support for up to 50 A/cm^2, it does not provide support for all current densities values above 100 mA/cm^2 (including those above 50 A/cm^2).

Some of the claims (see for example only, claims 1 and 2) have been amended to recite that the forming of the particles into a stable plasma, is caused merely by the step of or means for, vibrating the solid.

There is no support in the original disclosure for reciting that the vibrating of the solid, by itself, will cause the particles to form into a stable plasma.

Indeed, this amendment to the claims is contradicted for example, by claims such as claim 3, which, instead recite that the particles are caused to become a stable plasma inside the solid:

"as a result of vibrations and the size of the cavities" (underlining added).

Further, there is no support in the original disclosure for the active positive step of vibrating the solid (as for example in amended claims 1, 5, 9, 11) nor of a means for vibrating the solid (as for example in amended claims 2, 6, 10, 12), particularly since applicant has stated on the record that the vibrations referred to in the amended claims is not due to some external source, but instead refers to

the vibrations inherently produced by formation of molecular hydrogen in the solid. See page 25 of the 4/26/04 response which states:

> "Other amendments to claims 1-12 have been presented for the purpose of clarification, and more particularly to remove pronouns from the claims, correct Markush language, and recite inherent features (i.e., "inside the lattice"). For example, the term "vibrating" and other conjugations of this verb, as added herein to the currently amended claims, refer to vibrations produced in the solid by the release of energy from molecular hydrogen formation."

4. The specification is objection to under 35 U.S.C. 112, first paragraph, as failing to provide an adequate written description of the invention and as failing to adequately teach how to make and/or use the invention, i.e. failing to provide an enabling disclosure, for the reasons set forth in section 3 of the 10/24/03 Office action. Note that said section 3 of the 10/24/03 Office action incorporates section 3 of the 2/24/03 Office action which in term, incorporates section 3 of the 4/19/01 Office action.

Applicants arguments are unpersuasive for reasons already of record.

Applicants argue the examiner is attempting to equate applicants invention to cold fusion.

This issue was specifically explained to applicant on page 3 of the 2/24/03 Office action. The pertinent portion of said page 3 is reproduced below for applicants convenience.

> "Applicant argues that the issues regarding an adequate written description, an enabling disclosure and operativeness of obtaining nuclear reactions, etc., with applicants invention are not pertinent since claims 1-12 do not recite refer to such.
> However, such nuclear reactions are recited for example in claims 13-26. while such currently represents non-elected species, it is pointed out that claim 1 is a generic claim to said non-elected species and if claim 1 were

> subsequently found to be allowable, the issue of sufficiency of disclosure and operativeness in regard to claims to the non-elected species, would have to be considered. Note in this respect, the election of species requirement set forth in section 2 on page 2 of the 8/28/00 Office action. Accordingly, this issue raised by the examiner concerning an adequate written description, an enabling disclosure and operativeness of the embodiments wherein nuclear reactions are alleged to be obtained, are still considered pertinent and must be addressed by applicant.
> On this same point, it is noted that applicant on page 5 of the 10/21/02 response, now admits that such nuclear reactions cannot be obtained."
>
> Said page 3 of the 2/24/03 Office action then went on to state:
>
> "However, even if the "cold fusion" issue was not present, applicants disclosure is still insufficient and non-enabling"

Both, the 2/24/3 and the 10/24/03 Office actions set forth reasons (other than "cold fusion") as to why applicants disclosure is still insufficient and non-enabling.

Applicant is still arguing (see for example pages 26 and 32+ of the 4/26/04 response) that it is critical to the formation of plasma in the cathode lattice, to utilize an ionic solution having a pH less than 1.0, despite statements in the original specification to the contrary.

As previously pointed out to applicant, after the actual filing of an application in the Office, an applicant cannot use the "Remarks" section of a subsequent amendment to attempt to change, ignore, disregard, or pretend as non-existent, certain portions of applicants specification that applicant no longer agrees with.

The only proper way to remove said "certain portions" of a specification is by filing a continuation-in-part application (which has had said "certain portions" removed).

Applicants own specification contradicts his statements in the Remarks section of the 4/26/04 response that it is critical for formation of plasma in the cathode to utilize an ionic solution of pH < 1.

While the specification on page 21 lines 4-5 states it is easier to create plasma in a solid or cathode using an ionic solution of pH < 1, the specification as a whole clearly teaches than a plasma can be created in the solid with an ionic solution of any pH, acidic or basic.

Note in this respect, the specification on page 4 lines 13, 14; page 9 lines 22+; page 19 lines 14-18 which state:

> "The ionic solutions can have any pH value -- basic or acid. However, the time needed in a basic solution to produce the plasma inside the electrode is longer because the plasma only begins to appear when each elementary cell holds a hydrogen atom."
>
> and; the paragraph bridging pages 20-21 which states in part:
>
> "In the case of an ionic solution with pH < 1, the intensity of the current-density can be large, since only a small percentage of the current-density can be used to charge the electrode with atomic hydrogen. It can take several hours to increase the concentration from $PdH_{0.66}$ to PdH. For acid solutions of PH < 1, the creation of plasma is far easier."

On this same note of an argued criticality of an ionic solution of pH < 1, it is noted that applicants specification makes a general statement that plasma can also be created in a solid from a plasma gas or a gas atmosphere (also recited in applicants claims). Clearly, a plasma gas or gas atmosphere does not have a pH < 1.

The claimed source of particles (isotopic hydrogen), is simply a source of particles which are caused to enter the Pd lattice.

Once an isotopic hydrogen particle is inside the Pd lattice, the artisan can not possibly determine from said particle, its external source, i.e. whether it came form an ionic solution, a plasma gas or a gas atmosphere.

This further supports applicants own specification that an ionic solution with any pH value, basic or acid can be used as a source of particles, the only difference being the time it takes to obtain the desired isotopic concentration in the Pd lattice (and thus contradicting applicants argument that one must use an ionic solution having a pH less than one).

To be otherwise, would mean that applicants invention could not be operative utilizing a plasma gas or a gas atmosphere as the "source of particles".

It is noted in regard to this issue of pH < 1, that applicant on page 26 of the 4/26/04 response, actually now argues that a pH < 1 is a fundamental condition necessary for the formation of sufficient plasma in the solid.

The claims themselves do not recite the term "sufficient" plasma nor does this term "sufficient" plasma appear defined in the specification.

Indeed, the specification does not define any minimum number of particles that must be present for one to have a "plasma".

The Random House College Dictionary, revised edition 1980, only indicates a plasma as being a highly ionized gas containing an approximately equal number of positive ions and electrons.

Applicants arguments that Pons et al do not refer to hydrogen/deuteron atoms in the lattice of the cathode, as existing predominately as freely, highly

mobile nuclei (i.e. protons, deuterons and/or tritons), are without merit for reasons already of record.

Applicant is clearly incorrect in stating that the reference to nuclei on page 20 of Pons et al, refers only to sources of isotopic hydrogen atoms.

Said page 20 clearly refers to a ratio of protons to deuterons, inside the lattice of the cathode.

The pertinent portion of said page 20 is reproduced herein for applicants convenience.

> "Alternatively, the source of isotopic hydrogen may be ordinary water, deuterated water, tritiated water, or any combination of the three in molar rations such that the ration of ordinary hydrogen nuclei (protons) in the lattice to the total deuterium nuclei (deuterons) and/or tritium nuclei (tritons) is preferably between about 5:1 to 1:5. (Underlining added).

Nowhere on page 24 of Pons et al, can the examiner find the statement that applicant considers "clearly stated" (bottom of page 30 of the 4/26/04 response).

On the bottom of page 30 of the 4/26/04 response, applicant alleges without any factual reputable factual evidence, that the statements on pages 25, 28, 38 (actually page 39) are false.

The Manchester article (page 31 of the 4/26/04 response) is not dated and thus cannot properly be relied on. However, assuming for the sake of argument that it has a proper date, the following points are noted:

First, the Manchester article does not overcome the statements in lines 1-6 on page 18 of Pons et al:

> "The isotopic hydrogen atoms exist as nuclei, e.g., deuterons (D+) in the lattice, as evidenced by migration of the nuclei in an electric field. The electron from each isotopic hydrogen nuclei is presumed to be delocalized in the band structure of the metal lattice."

Second, applicant has not pointed to any specific page or portion thereof, which has the alleged evidence.

Third, it is not seen where the Manchester article specifically refers to the system and method of operation disclosed in Pons et al and, states that such only provides isotopic hydrogen atoms in the metal lattice.

Pons et al, by reciting that isotopic hydrogen exists predominately as freely, highly mobile nuclei, indicate that the lattice may have some isotopic hydrogen atoms in the lattice, along with the predominately nuclei.

Even applicants own specification is seen as admitting that the solid or cathode in applicants system will contain some hydrogen atoms or PdH (palladium hydride).

See for example, the specification on page 11 lines 3+ which states:

> "The structure of palladium explains the formation of plasma. The palladium cathode is made of $PdH_{0.66}$. Two thirds of the palladium atoms are bound with one hydrogen atom. The remaining third are completely free to react."

The paragraph bridging pages 14, 15 states in part:

> "During the electrolysis, the hydrogen atoms created in the layer under the surface can migrate in all directions. Progressively, it is possible to saturate the inside of the palladium electrode from $PdH_{0.66}$ to PdH with basic or acid solutions. Once the saturation is obtained (one hydrogen atom per palladium atom), the entire core of the electrode is converted into plasma cells. The free volume available per palladium atom is equal to the volume of one hydrogen atom. The electrode thus becomes a layer of energy and plasma cell surrounding a core composed uniquely of plasma cells." (Underlining added).

The paragraph bridging pages 16, 17 states in part:

> "It is therefore possible to obtain plasma-solid both in the active layer and in 50% or more of the electrode (active regions of the core). The volume of the electrode that can be used is increased by a factor of about 1000.
> E) Structure of the Plasma Inside the Resonant Cavity
> The distribution of the plasma inside the plasma cells is not homogeneous: each corner of the cell is occupied by a metallic nucleus which contains an average of fifty protons. The free volume (4 $A°^3$) inside the cell represents approximately 25 to 29% of the total volume of the lattice (15 $A°^3$). In an "elementary plasma cell", half of this free volume is occupied by one hydrogen atom bonded to one of the metallic atoms." (Underlining added).

Even applicant in his arguments in the bottom portion of page 28 of the 4/26/04 response, admits that in his inventive system with a pH < 1, the palladium cathode contains PdH.

Thus, if the Manchester article can somehow be construed as evidence that the statements in Pons et al re the presence in the cathode of freely, highly mobile isotopic hydrogen nuclei, are false, it must also be construed as evidence that in applicants invention, the statements re the presence of free, mobile hydrogen nuclei or what applicant refers to as "plasma", are also false.

In any event Silvera et al (dated 1990) is another document showing that it is known that isotopic hydrogen will exist inside a Pd lattice as positive ions, "a gas of deuterons moving in a rigid lattice of Pd". See page 9143 of Silvera et al which states:

> "At room temperature and at a pressure of 1 bar a concentration of approximately 0.6 D per Pd ion can be achieved.[6] By increasing the D_2 pressure to approximately 10 kbar, the concentration of D can be raised to approximately 1.[8] Hemmes et al.[9] have studied the superconductive properties of PdD by diffusing D_2 into Pd up to 40 kbar. At a certain pressure and temperature, D_2 dissociates at the Pd surface and diffuses

into the lattice as a positive ion, behaving to a certain extent as a gas of deuterons moving in a rigid lattice of Pd."

See also Kubota in lines 11-17 on page 8 of the English language translation.

Applicants arguments on pages 31+ of the 4/26/04 response, do not actually answer the issue set forth by the examiner and referred to by applicant on said page 31.

Note that the examiner on page 6 of the 4/19/01 Office action had stated:

"Applicant has presented no reputable factual evidence to support his theory on what is caused to take place in the cathode. Applicant has presented no reputable factual evidence to support his assumptions and speculation (concepts and theories) as to what happens to the hydrogen when and after it has been caused to enter the cathode and, to the amounts of hydrogen, which can be caused to build up in the cathode. Applicant has presented no reputable factual evidence to support his assumption and speculation that the hydrogen isotopes will exist in the cathode and be stored therein as protons, deuterons and tritons rather than as atoms or molecules or in the form of a hydride, e.g. palladium hydride. Furthermore, it is pointed out that concepts and theories per se, are not patentable."

Applicants arguments are basically, a restatement of the assumptions, etc., set forth in applicants specification.

The examiner has repeatedly pointed out that applicant has presented no reputable factual evidence to support his various assumptions, including that "plasma" will be formed in the cathode, that vibrations will inherently be formed in the cathode in the manner set forth in the specification, that the "plasma" will be stable and will be maintained in stable form.

Applicant has basically taken known prior art devices, operated them in the same manner as in the prior art, but alleges that he somehow gets different results, without any reputable factual evidence in support thereof.

Note again the examiner's statements on page 5 of the 2/24/03 Office action:

> "Applicant has not set forth any written description of how and in what manner, he is actually able to determine that a "plasma" exist inside his cathode, and, that a "plasma" does not exist inside the cathode of such systems as that of Williams et al and Pons et al.
> It appears from the 10/21/02 response that applicant simply "assumes" that a plasma exists in his cathode and, simply "assumes" that no plasma exists in the cathodes of systems such as that of Williams et al and Pons et al.
> If applicant can actually create plasma inside his cathode but Williams et al cannot, it can only be because of some non-disclosed, additional apparently critical feature/parameter, etc, which applicants invention has but which is lacking in systems such as that of Williams et al and Pons et al."

Accordingly, all issues set forth herein, which incorporates section 3 of the 10/24/03 Office action, section 3 of the 2/24/03 Office action and section 3 of the 4/19/01 Office action, are still considered pertinent in determining patentability of applicants invention.

5. Claims 1-12, 39-74 are rejected under 35 U.S.C. 112, first paragraph, for the reason set forth in the objection to the specification, in section 4 above.

6. 35 U.S.C. 101 reads as follows:

> Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

7. Claims 1-12, 39-74 are rejected under 35 U.S.C. 101 because the invention as disclosed is inoperative and therefore lacks utility, for the reasons set forth in section 4 above and in section 6 of the 10/24/03 Office action.

Note the discussion of applicants arguments in section 4 above.

Applicants argument that the use of a pH less than one is the feature/parameter which makes his invention operative to produce plasma versus systems such as those of Williams et al and Pons et al, is contradicted by his own specification.

As pointed out again in section 4 above, applicants specification clearly states that one can produce plasma in the cathode (though not as quickly) even when using an acidic solution with a pH greater than one or even with a basic solution!

8. Claims 1-12, 39-74 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention, for the reasons set forth in section 7 of the 10/24/03 Office action.

Applicant is relying on his arguments concerning the rejections under 35 USC 112 first paragraph and 35 USC 101.

Said arguments have been addressed in sections 4 and 7 above.

The claims do not provide proper antecedent basis for all terms present (see for example, the term "vibration" in claim 3).

9. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for a patent.
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

10. Claims 1-12, 40, 41, 43, 44, 46, 47, 49, 50, 52, 53, 55, 56, 58, 59, 61, 62, 64, 65, 67, 68, 70, 71, 73, 74 are rejected under 35 U.S.C. 102(b) as being anticipated by any of Silvera et al, Hemmes et al or Myers et al.

The claims recite the source of particles can be any of an ionic solution, a plasma gas or a gas atmosphere.

Silvera et al show the use of a gas atmosphere or plasma gas as a source of isotopic hydrogen (e.g. see the second column on page 9143 which refers to positive ions diffusing into the Pd lattice (applicants claimed "plasma gas" reads on such) and, the second column on page 9144 which refers to preloading the Pd lattice in an atmosphere of D_2 gas (applicants claimed "gas atmosphere reads on such)). Silvera et al obtained D/Pd concentrations as high as 1.34 (note the abstract).

Hemmes et al show the use of a gas atmosphere or plasma gas as a source of isotopic hydrogen (e.g. see the first column and Fig. 1 on page 4111). Hemmes et al refer to H/Pd or D/Pd concentrations equal to or greater than 1 (e.g. see the second column on page 4110).

Myers et al show the use of ion implantation to obtain D/Pd concentration as high as 1.6 (note the abstract).

Applicants claimed "plasma gas" source reads on this feature of ion implantation (see also in this respect, applicants specification on page 19 lines 1-9).

According to applicants specification on page 15 lines 2+:

> "Once the saturation is obtained (one hydrogen atom per palladium atom), the entire core of the electrode is converted into plasma cells."

See also, applicants specification on page 10 lines 28-31, as well as pages 11, 12, 14.

In the references, the palladium lattice is supersaturated, i.e. it has more than one hydrogen atom per palladium atom).

Thus, according to applicants own specification, the palladium lattice in any of the references must inherently have "plasma" therein since it meets applicants definition.

Note that Silvera et al already refer to this existence of "plasma" in the palladium lattice re the statement in the second column on page 9143:

> "At a certain pressure and temperature, D_2 dissociates at the Pd surface and diffuses into the lattice as a positive ion, behaving to a certain extent as a gas of deuterons moving in a rigid lattice of Pd."

The claims recite a step or means of vibrating the lattice.

However, applicant has already stated on the record that the vibrations referred to in the amended claims is not due to some external source, but instead refers to the vibrations inherently produced by formation of molecular hydrogen in the solid. See page 25 of the 4/26/04 response which states:

> "Other amendments to claims 1-12 have been presented for the purpose of clarification, and more particularly to remove pronouns from the claims, correct Markush language, and recite inherent features (i.e., "inside the lattice"). For example, the term "vibrating" and other conjugations of this verb, as added herein to the currently amended claims, refer to vibrations produced in the solid by the release of energy from molecular hydrogen formation."

Applicants specification also indicates that the energy released in the Pd lattice when a hydrogen molecule is formed therein, will inherently cause the Pd lattice to vibrate (e.g. see pages 5, 8, 11, 12, 14, 15). Said page 11 lines 34+ of applicants specification states that the free space between the Pd atoms in the Pd metal lattice acts as a resonate cavity. Page 12 lines 10+ state that these self induced vibrations will become more or less synchronized and that the effect of the impulses and of the vibrations is cumulative; the specification on page 12 lines 9 and 10 in regard to the "impulses", states:

> "The impulses that occur every time an hydrogen molecule is created produce vibrations inside the metal".

Thus, any of references must inherently have "vibrations", the same as in applicants case.

As to claims such as claim 5, it is noted that no details have been presented of the second "media" which is not the source of particles, and thus,

this claimed second "media" reads on anything, including a solid, a second gas, etc.

In any of the references, there will be a portion which is not in contact with the "source of particles" (isotopic hydrogen) and, this second "media" in applicants claims reads on whatever is in contact with said portion of the Pd lattice.

Applicants specification refers to obtaining saturation of the Pd lattice, i.e. one hydrogen atom per palladium atom (e.g. see the top of page 15 of the specification) (such presumably is what provides applicant with the particle density of 10^{23} to 10^{24} particles per cubic centimeter).

Since each reference is at least saturated, each reference must inherently have at least 10^{23} to 10^{24} particles per cubic centimeter.

11. Claims 1-4, 7-12, 39-50, 57-74 are rejected under 35 U.S.C. 102(b) as being anticipated by either Pons et al or Cedzynska et al.

Pons et al have been discussed above in section 4.

Note again that Pons et al show an electrolytic system for forming free, highly mobile isotopic hydrogen nuclei (what applicant refers to as "plasma") in a Pd lattice (note for example, pages 18, 20, 24, 25, 28, 39).

Pons et al show the claimed currents for example, on pages 5, 22, 66, 68, etc. Page 22 refers to the use of an intermittent or pulsed current. Page 23 refers to a stepwise charging of the Pd cathode.

Pons et al show one can utilize an acidic electrolyte solution with a molarity of about 0.1M to about 1.0M (see for example, pages 6, 20, 61, 63, 68,

etc.). Any molarity of an acidic solution that is above 0.1M will inherently have a pH less than 1.

As to limitations which are considered to be inherent in a reference, note the case law of In re Ludtke, 169 USPQ 563, In re Swinehart, 169 USPQ 226, In re Fitzgerald, 205 USPQ 594, In re Best et al, 195 USPQ 430, and In re Brown, 173 USPQ 685, 688.

Pons et al refer to obtaining a high concentration of isotopic hydrogen (including "saturation") in the Pd cathode (e.g. see page 14). "Saturation" will inherently provide an isotopic hydrogen density of 10^{23} and 10^{24} particles cubic centimeter.

Cedzynska et al also show an electrolytic system for obtaining a high concentration of isotopic hydrogen in a Pd cathode (e.g. D/Pd ratio of 1 (see for example pages 7, 10, 14, 19, 28)), utilizing currents of greater than 100 mA/cm^2 (e.g. see pages 7, 8 (with page 7 referring to a stepwise application of current), utilizing 0.5M sulfuric acid (e.g. see page 10, 16, which inherently provides a pH less than 1).

While Cedzynska et al may not refer to the presence of "plasma" in the Pd cathode, such must inherently be present. Note in this respect, applicants own specification on page 15 lines 2+ which states:

> "Once the saturation is obtained (one hydrogen atom per palladium atom), the entire core of the electrode is converted into plasma cells."

See also, applicants specification on page 10 lines 28-31, as well as pages 11, 12, 14.

Since (as pointed out above) Cedzynska et al have a D/Pd ratio of 1, they must inherently have "plasma" in the Pd cathode since they have the conditions applicant states is necessary for the formation of "plasma".

Since the Pd lattice in Cedzynska et al is saturated (D/Pd ration of 1), the lattice must inherently have a deuteron (D) density of $10^{23} - 10^{24}$ particles per cubic centimeter.

The claims refer to "vibrations".

However, it is noted in this respect that applicants specification indicates that the energy released in the Pd lattice when a hydrogen molecule is formed therein, will inherently cause the Pd lattice to vibrate (e.g. see pages 5, 8, 11, 12, 14, 15). Said page 11 lines 34+ of applicants specification states that the free space between the Pd atoms in the Pd metal lattice acts as a resonate cavity. Page 12 lines 10+ state that these self induced vibrations will become more or less synchronized and that the effect of the impulses and of the vibrations is cumulative; the specification on page 12 lines 9 and 10 in regard to the "impulses", states:

> "The impulses that occur every time an hydrogen molecule is created produce vibrations inside the metal".

Thus, each reference must also, inherently have "vibrations", the same as in applicants case.

12. Claims 1-4, 7-12, 39-50, 57-74 are rejected under 35 U.S.C. 103(a) as being unpatentable over either Pons et al or Cedzynska et al as applied to claims

1-4, 7-12, 39-50, 57-74 above, and further in view of either Jouanneau et al or" web site setting forth relationship between molarity and pH".

Applicant has argued that the examiner has not shown that the reference inherently have a pH less than 1.

The examiner had considered that this "inherently" had been shown because the examiner in the last Office action, had cited and applied, one of applicants own publications, Jouanneau et al which, in the second column on page 288, sets forth a relationship between molarity and pH, showing that a molarity of 0.5 has a pH less than 1, and, that as the molarity increase, the pH decrease even more!

Alternatively, the "web site" can be relied on to show that a molarity of 0.5 has a pH less than 1 (as does a molarity of above 0.1 such as 0.11).

Accordingly, since Pons et al and Cedzynska et al each show an acidic solution with a molarity of 0.5, said solution in each of these references must inherently have a pH less than 1.

13. Claims 1-4, 7-12, 39-50, 57-74 are rejected under 35 U.S.C. 103(a) as being unpatentable over either Pons et al or Cedzynska et al as applied to claims 1-4, 7-12, 39-50, 57-74 above, and further in view of Doke et al.

Doke et al show it is old and advantageous in the art to utilize a vibrating electrode and, to so modify either of the primary references would accordingly have been prima facie obvious.

14. Claims 1-4, 7-12, 39-50, 57-74 are rejected under 35 U.S.C. 103(a) as being unpatentable over either Pons et al or Cedzynska et al, taken with either

Jouanneau et al or" web site setting forth relationship between molarity and pH" as applied to claims 1-4, 7-12, 39-50, 57-74 above, and further in view of Doke et al.

Doke et al show it is old and advantageous in the art to utilize a vibrating electrode and, to so modify either primary reference would accordingly have been prima facie obvious.

15. Claims 1-12, 39-74 are rejected under 35 U.S.C. 103(a) as being unpatentable over either Bellanger et al or Schulten et al, in view of either Pons et al or Cedzynska et al.

The primary references each show electrolytic cells wherein a Pd cathode in an acidic solution is caused to absorb isotopic hydrogen. The currents are greater than 100 mA/cm^2 (e.g. see col. 4 lines 17-24 of Schulten et al and; col. 4 lines 3-8, col. 6 last 7 lines, col. 8 lines 5-22 of Bellanger et al). As to claims 5 and 6, note that the primary references each show the Pd cathode as being the material or structure which separates two distinct media.

The secondary references have been discussed above.

While the primary references may not state that the pH of the acidic solution is less than 1, the secondary references each show that it is old and advantageous in this art to utilize molarities which inherently have a pH less than 1, and, to so modify either primary reference would accordingly have been prima facie obvious. The secondary references also each show it is old and advantageous in the art and hence obvious, to have the Pd saturated with isotopic hydrogen.

The claims refer to the presence of "plasma" in the Pd cathode. However, it is considered that either primary reference will inherently have "plasma" in the cathode.

Note in this respect, applicants own specification on page 15 lines 2+ which states:

> "Once the saturation is obtained (one hydrogen atom per palladium atom), the entire core of the electrode is converted into plasma cells."

See also, applicants specification on page 10 lines 28-31, as well as pages 11, 12, 14.

Thus, since each primary reference as above modified has a saturated Pd cathode, said Pd cathode must inherently have "plasma" therein the same as in applicants case, and, the Pd cathode must also inherently have an isotopic hydrogen density of 10^{23} - 10^{24} particles per cubic centimeter.

In any event, Pons et al may be relied for showing that the Pd cathode will inherently contain isotopic hydrogen nuclei (i.e. applicants claimed plasma) therein (see for example, pages 18, 20, 24, 25, 28, 39).

The claims refer to "vibrations".

However, it is noted in this respect that applicants specification indicates that the energy released in the Pd lattice when a hydrogen molecule is formed therein, will inherently cause the Pd lattice to vibrate (e.g. see pages 5, 8, 11, 12, 14, 15). Said page 11 lines 34+ of applicants specification states that the free space between the Pd atoms in the Pd metal lattice acts as a resonate cavity. Page 12 lines 10+ state that these self induced vibrations will become more or

less synchronized and that the effect of the impulses and of the vibrations is cumulative; the specification on page 12 lines 9 and 10 in regard to the "impulses", states:

> "The impulses that occur every time an hydrogen molecule is created produce vibrations inside the metal".

Thus, each reference must also, inherently have "vibrations", the same as in applicants case.

16. Claims 1-12, 39-74 are rejected under 35 U.S.C. 103(a) as being unpatentable over either Bellanger et al or Schulten et al, in view of either Pons et al or Cedzynska et al as applied to claims 1-12, 39-74 above, and further in view of Doke et al.

Doke et al show it is old and advantageous in the art to utilize a vibrating electrode and, to so modify either of the primary references would accordingly have been prima facie obvious.

17. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory

action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

18. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Harvey Behrend whose telephone number is (703) 305-1831. The examiner can normally be reached on Tuesday to Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Michael Carone, can be reached on (703) 306-4198. The fax phone number for the organization where this application or proceeding is assigned is (703) 306-4195.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-1113.

Behrend/vs
August 6, 2004

HARVEY E. BEHREND
PRIMARY EXAMINER